

The present invention discloses an AC-to-DC converter that includes a transformer having a primary side for inputting an input signal and a secondary side for outputting an output signal. The AC-to-DC converter further includes a synchronous rectifier controller connected to the secondary side for controlling a synchronous rectifier (SR) switch on the secondary side for generating the output signal. The SR switch is implemented as a MOSFET transistor with a gate connected to the synchronous rectifier controller. The synchronous rectifier controller further includes a plurality of circuit elements for turning off the SR switch before a main switch of the transformer is turned on. The synchronous rectifier controller further turns on the SR switch when the main switch of the transformer is turned off. The synchronous rectifier controller controls the SR switch and turns it off with a precisely controlled dead time before the main switch of the transformer is turned on.